



**REPORT ON EVIDENCE-BASED ANALYSIS OF
COMMUNITY-BASED SURVEILLANCE
SYSTEMS FOR ZIKA AND THE
TRANSMITTING VECTOR IN ECUADOR AND
OTHER COUNTRIES IN THE REGION WITH A
COMPARABLE EPIDEMIOLOGICAL
SITUATION**



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I. BACKGROUND

In early 2016, the World Health Organization (WHO) declared the Zika virus to be a global health emergency. In that year, there were 2,946 laboratory-confirmed cases of Zika reported in Ecuador. As of Epidemiological Week 28 of this year, 2075 cases, confirmed by laboratory or by epidemiological nexus, have been reported. In light of the advance of the disease and the existence, in the majority of the tropical and sub-tropical zones of Ecuador, of situations which favor the transmission of the disease, the Ministry of Public Health felt it was necessary to define strategies to employ a multi-sectoral and interdisciplinary approach to combat the Zika virus epidemic in the country, including: Inter-sectoral coordination, early detection of cases, control and surveillance, capacity development (laboratory, clinical management, vectoral surveillance and community-based vector control), rapid and integrated health interventions (vector control); and an information, communication and education strategy.

The Zika epidemic is affecting many countries in the region, and is progressing at a growing rate in Ecuador as well as in its neighboring country of Peru. The two countries have collaborated effectively, on previous occasions, in joint efforts to leverage results and improve health outcomes for their citizens, for example in projects to combat HIV and Tuberculosis, implemented by CARE Ecuador and CARE Peru, which achieved important improvements in disease prevention and case monitoring, by connecting the community with the public health care system.

On this occasion, CARE Ecuador and CARE Peru are executing a binational project entitled “Together Against Zika”, which seeks to contribute to strengthening the Zika prevention and control capacities of local actors and communities, by impacting the knowledge, attitudes and practices of communities and local health care agents and workers; to identify and leverage the best experiences in this area in order to strengthen and/or develop community surveillance and control mechanisms, and to develop working protocols at the community level and with regard to information systems, with an emphasis on pregnant women and women and adolescents of reproductive age, while encouraging the active involvement of the communities.

The purpose of this consultancy is to provide an evidence-based analysis of best practices in community-driven epidemiological surveillance practices focused on Zika and vector control, and to propose solutions adapted to the Zika situation in Ecuador.

II. PURPOSE OF THE CONSULTANCY

To conduct an evidence-based study and field assessment on experiences in community surveillance for controlling Zika and its vector of transmission in Ecuador, in particular looking at inter-sectoral and community participation, the roles and performance of local surveillance systems, the roles of health care professionals and workers involved in this strategy, as well as those responsible for epidemiological surveillance, especially community-based surveillance, and mechanisms for involving communities and municipalities in receiving and providing information for the purpose of developing proposals and strategies based on leveraging and strengthening the best past and present experiences and practices in the country or in countries with a similar epidemiological situation.

SPECIFIC OBJECTIVES

1. Conduct an EBA field study on community surveillance systems – the role and performance of health care professionals and workers, community agents and other organizations in experiences of community-based surveillance that are currently in process or were previously implemented in Ecuador, and/or to document similar experiences in neighboring countries with a similar epidemiological problem.
2. Develop proposals to adapt a currently functioning system and/or to design an information and early warning system, which is easy to manage, economical and efficient, for use by community health agents, and to include community-based activities and the results in the formal monitoring systems of the MSP.
3. Develop a proposal to update/develop a socially/culturally adapted information system for surveillance activities, including the roles of community health agents, in order to reduce the chance of rejection and increase community participation in the provision of reliable information, and to present this proposal to the MSP for implementation through the community-based Health Care System.

This consultancy product relates to the first specific objective. The document summarizes Zika prevention actions taken by various countries in the region (Colombia, Bolivia, Argentina and Peru), and details what has been done in Ecuador.

III. METHODOLOGY

In order to identify whether or not there currently exists, or has previously existed, any community-based epidemiological surveillance system for Zika integrated into the formal surveillance system of the Ministry of Public Health (MSP), the following activities were carried out:

- Primary information was collected through non-structured interviews with key informants at different levels of the health system.
- A literature review was done to identify, analyze and systematize relevant secondary information.

To compile information on international experiences, the consultants reviewed all of the Zika-related information available on the websites of the Ministries of Health of each country. We also reviewed the information on Zika contained in the websites of the World Health Organization, the Pan-American Health Organization, and the United Nations Children's Fund (UNICEF). Subsequently, the team conducted general internet searches using keywords related to Zika, such as "Community-based epidemiological surveillance", "community surveillance", "surveillance", "social participation", along with searches combining these terms and the names of each country.

IV. COMMUNITY-BASED EPIDEMIOLOGICAL SURVEILLANCE SYSTEMS AND PRACTICES FOR ZIKA AND VECTOR CONTROL IN THE REGION

1. COLOMBIA

Colombia stands out in terms of its advances in combatting the diseases caused by Zika, and other diseases transmitted by the *Aedes aegypti* mosquito. The National Institute of Health confirmed the first four autochthonous cases of the Zika virus in epidemiological week 40 of 2015 (MINSAL, 2016). Various regions in the country report infestations of the *Aedes aegypti* and/or *Aedes albopictus* vectors, which facilitate the transmission of a number of diseases such as Chikungunya, Zika and Dengue (MINSAL, 2016).

In July 2016, the Ministry of Health declared the Epidemic phase of the Zika virus to be closed. Up to that date, there were 99,721 reported cases (over 80,000 diagnosed by laboratory and the others by clinical suspicion, and 17,730 pregnant women who were being monitored by the National Institute of Health).

The Ministry of Health and Social Protection of Colombia prepared a *Response Plan to the Zika virus fever*. This document lays out lines of action and activities to be carried out to combat Zika in the country, and established the parties responsible for each activity. These activities include strengthening the health surveillance system and developing a Zika Surveillance Protocol. However, this document does not address community-based epidemiological surveillance.

For its part, the *Public Health Surveillance Protocol for the Zika Virus Disease* seeks to establish a number of surveillance processes in order to identify and collect information on Zika cases and trends, to be used in guiding public policy decisions. Community surveillance is mentioned as possible source for collecting case data, along with other forms of monitoring. The protocol also notes that it is important for municipal health departments to engage **in active community case identification efforts. Important tools mentioned for community surveillance efforts include the printed press, television, radio, telephones and emails** (Tolosa, 2016).

The Epidemiological Surveillance System (SIVIGILA) created via Presidential Decree 3518 in 2016, is a fundamental tool for epidemiological surveillance of the Colombian public health system. Cases of disease caused by Zika must be reported through this system. Additionally, this decree establishes the creation of Public Health Surveillance Committees in all departments, districts and municipalities, including **Community Epidemiological Surveillance Committees (COVECOM)**. **The functions of COVECOMs include: advising and supporting the health authority; recommending the formulation of plans and programs for the operation of the Surveillance System; and designing and carrying out actions to control public health problems** (Arts. 37 and 38).

The city government of Cienaga, in accordance with Decree 3518, initiated the first **Community Epidemiological Surveillance Committee (COVECOM)** in 2016, for the purpose of informing community leaders about the Zika virus in that municipality. **The idea of the Committee was to empower leaders to be health monitors in their neighborhoods and to take charge of collecting information and sending it on to the Health Department** (Pava, 2016).

At the national level, the Ministry's Zika prevention and outreach efforts focused on coordinating activities and issuing guidelines to orient regional and local-level

efforts. A national operations team was formed, comprised of specialists from the Ministry, the National Institute of Health, and other organizations.

In Circular 002 of 2016, the Ministry of Health issued an Emergency Plan, which defined the guidelines for implementing emergency plans in response to Zika-related fever, including clinical guidelines for treating pregnant women infected with Zika and patients with neurological complications, as well as special recommendations. This plan identifies the responsibilities of the Departments, Municipalities, Benefit Plan Administrators and Health Services Institutes. As to community surveillance, this plan establishes that it is the duty of the municipalities to **“Design and implement, on a collaborative, inter-institutional and multi-sectoral basis (health, public services, education, culture, tourism, communications, housing and environment, as well as civil society and community organizations), a contingency plan to contain and mitigate Zika fever, which contains as a minimum the components and activities established by this Ministry.”** The Emergency Plan was sent to the territorial health agencies to strengthen their surveillance and control systems in response to the infestation of the *Aedes aegypti* vector (MINSAL).

At the national level, the ministry has worked in this effort with 345 community leaders and 169 community organizations throughout the country. 677 community-focused events and work days have taken place, through which 2 million homes have been inspected to look for standing water and mosquito breeding sites (MINSAL).

The City of Barranquilla stands out due to its work in community epidemiological surveillance. The Department of Health carries out a number of activities targeted to communities to combat a variety of vector-borne diseases. **The Health Walkers and community mothers are groups dedicated to promoting healthy communities. Their work consists of visiting neighborhoods to inform families about the Zika virus and to teach them how to eliminate mosquito breeding grounds (PAHO, 2016). They also answer questions and detect possible cases to be referred to the closest health center (PAHO, 2016).**

The District Health Department of Barranquilla has implemented a series of institutional actions such as actively seeking out patients and prevention events in five localities (Barranquilla Department of Health, 2016). **Trainings have been given on preventing the virus and managing the disease, and community leaders have received recommendations for community-level actions. In addition, a new strategy was introduced in the form of a “Fair for Safe and Responsible Sexuality” which seeks to prevent unplanned pregnancies and also to identify any pregnancy women infected with Zika. More than 1,000**

pregnant women and women of child-bearing age attended the fair (Barranquilla Department of Health, 2016).

Another interesting initiative being led by the City Government of Barranquilla in relation to the Zika virus is the use of the Whatsapp application to report cases. **By creating Whatsapp groups, participants identify and report cases of diseases caused by the Aedes aegypti mosquito, including Zika** (Barranquilla Department of Health, 2016). **Community leaders participate on an individual and voluntary basis, and they are trained and given a guide on how to identify cases and detect vector breeding sites. The leaders also have a Health Line that they can call to report suspected cases, or they can notify the Health Walkers.** (Barranquilla Department of Health, 2016).

Other activities aimed at vector control include the volunteer efforts of female students of the “Cruzada Social” District Technical Institute of Barranquilla, who check their school every day to make sure that it is free of breeding sites. In addition, children are taught how to prevent vector-borne illnesses using educational games. The “No dengue on my block” strategy sends health workers to educate employees of stores, restaurants and other establishments on how to eliminate mosquito breeding grounds. There is also an effort being led by entomologists to trap and analyze the mosquitos (Barranquilla Department of Health, 2016).

In addition, the United States Centers for Disease Control is doing a study in Barranquilla to learn about the district Zika prevention and response strategy in the city.

In response to the efforts put forth by Colombia, and especially Barranquilla, in response to the Zika virus, the U.S. Centers for Disease Control is collaborating on a number of projects in the country. One that stands out is a study to determine the long-term effects of Zika infection during pregnancy. The study is monitoring 5,000 pregnant women starting in their first trimester of pregnancy, along with their partners and babies (Barranquilla Health Department, 2017; CDC, 2016).

2. BOLIVIA

In Bolivia, the Ministry of Health confirmed the first locally originated case of Zika virus infection on January 16, 2016 (WHO, 2016). In response, authorities have taken the following measures: intensifying vector surveillance and control activities, and educating the public about the risks associated with the Zika virus (WHO, 2016).

In that same year, the Ministry of Health of Bolivia issued the *National Guide for Managing the Zika Virus Infection*. The guide lays out a strategy for organizing activities to prevent and control Zika virus infections. This strategy establishes the importance of **Intercultural Community-Based Family Health Care** and working in coordination with health care establishments. In the guide, **Health Care Establishments are tasked with coordinating with civil society organizations to actively and passively seek out suspected cases and to cooperate with immediate reporting efforts** (Ministry of Health, 2016). **The guide sets out vector control activities that need to be performed, such as cleaning and eliminating mosquito breeding grounds, and also highlights the importance of conducting outreach and educational campaigns with the community** (Ministry of Health, 2016).

On February 3, 2016, a presidential decree was issued to approve the 2016-2018 Integrated Management Strategy for the Prevention and Control of Dengue, Chikungunya and Zika. This strategy contains the following components:

- Epidemiological surveillance
- Comprehensive patient care
- Laboratory analysis
- Environmental cleaning
- **Social mobilization – community participation**
- Integrated vector management

One of the main components of the strategy is to form a Community Surveillance Network, involving three tasks to be carried out by the National / Departmental / Regional Programs:

- 1. Create a community surveillance network.**
- 2. Train the members of the community surveillance network.**
- 3. Prepare technical-operational instruments for community-based reporting.**

Furthermore, community participation is deemed essential for integrated vector management. The goal is to eliminate potential *Aedes aegypti* breeding sites with the active involvement of the community.

Despite the existence of the decree approving this strategy which includes active community participation, there is no information readily available about the operational performance of activities focused on community surveillance.

On the other hand, there are various initiatives by UNICEF in Bolivia for combatting the Zika virus and its resulting illnesses. The organization is carrying out a door-to-door campaign in Bolivia to inform the community about the risks of Zika, which reached 246,619 families in 2016 (UNICEF, 2017). The same institution also coordinated health prevention and promotion activities with students in relation to Zika (UNICEF, 2017). UNICEF also contributes to activities to prevent Zika infection among pregnant women in Bolivia (UNICEF, 2017).

3. ARGENTINA

In Argentina, during epidemiological week 8 of 2016, the first case of local transmission of the Zika virus via sexual contact was reported in the province of Cordoba (Ministry of Health, 2016). According to the Ministry, between weeks 13 and 18 of that year, the first outbreak of vectoral transmission occurred in the country.

An increase of suspected and confirmed cases was observed between epidemiological weeks 1 and 16 of 2017; this increase was related to outbreaks in the provinces of Formosa, Salta and Chaco (PAHO, 2017).

In response to the Zika threat, the Ministry of Health prepared a *Guide for Comprehensive Surveillance of Zika Virus Infection and Recommendations for Health Care Teams*, as part of the Plan to Address the Zika Virus Disease in Argentina. The purpose of the guide is to help detect the introduction of the virus and monitor it, reduce the risk that it represents and recommend appropriate responses. As to surveillance, this guide details the signs and symptoms that can emerge depending on the virus-related event. It also outlines the case reporting process. After notifying the National Health Surveillance System, an email alert is sent to the provincial and national contact persons to provide them with immediate information to use in making decisions regarding the control and monitoring actions to take (Ministry of Health, 2016). **This document does not mention the implementation of community-level epidemiological surveillance at any point.**

The Ministry also issued a *Tutorial for Surveillance through the National Health Surveillance System*, geared toward the epidemiological surveillance of Zika and its complications. **This document explains how to use the National Health Surveillance System to report cases of Zika infection. However, it also makes**

no mention of community participation as part of epidemiological surveillance efforts.

UNICEF issued a *Guide to Social Participation in the Prevention of Dengue, Zika and Chikungunya* in Argentina. This guide, aimed at members of the community, emphasizes the importance of community participation, social mobilization and communication in controlling the vector in the country. It highlights the fact that the active participation of all members of the community is essential both for controlling mosquito populations as well as in decision-making, and that community members can contribute to the work of any organization working in the community and help them more effectively achieve their goals. This guide establishes the position of community promoter as an agent that catalyzes the social transformation necessary in terms of people's individual and collective customs and habits.

The guide describes the *Aedes* vector and explains its role in transmitting diseases like Dengue, Zika and Chikungunya. It then outlines prevention strategies to be worked on at the community level (UNICEF, 2016):

- Home visits: To eliminate breeding grounds where vectors can reproduce, and to prevent mosquito bites.
- Engaging educational institutions: giving talks to schools on the importance of maintaining a clean school building and grounds, providing messages in the form of posters and signs, using art to deliver messages about these diseases and introducing educational games.
- **Clean Patio Campaign:** Calls for every resident to conduct a periodic review of their house and property, and to eliminate unused elements (containers, tires, etc.) which could serve as a potential breeding site for mosquitos.
- Coordination with the media: work together with media outlets to broadcast key messages that inform, raise awareness, engage and directly involve the society. A number of activities can be included in this strategy, such as talks, social networking groups, videos, etc.

No information is available on activities that are reported to have been carried out based on this guide.

4. PERU

On April 17, 2016, Peru reported confirmation of the first case of Zika infection via sexual transmission of the Zika virus (WHO, 2016). In response to this situation, health authorities began to take the following measures (WHO, 2016):

1. Advising any travelers to areas where the Zika virus is reportedly circulating.
2. Instituting improved epidemiological surveillance
3. Entomological surveillance.

Before the first case was confirmed, the Ministry of Health prepared a *National Zika Preparedness and Response Plan*, in order to prepare health surveillance and service delivery systems.

The plan sets out lines of action, objectives, activities, and the persons/institutions responsible for each. Among the activities most focused on surveillance and the community are (Ministry of Health, 2016):

- Provide technical assistance to regions at high risk to strengthen their monitoring and epidemiological surveillance capacities.
- Train the staff of regional teams on integrated epidemiological surveillance, setting up a situation room and controlling outbreaks of disease caused by the Dengue, Chikungunya and Zika viruses.
- Implement national health surveillance activities, following WHO recommendations and its International Health Regulations (2005) at entry points throughout the country.
- Coordinate with the regions to prepare regional training plans aimed at health care personnel and community agents on promoting healthy practices and improving the environment to prevent Zika-related illnesses, and informing them about how the illness presents and how to identify cases in a timely manner.

No additional information was found on advances in community-based surveillance in Peru.

5. BRAZIL

The first case of autochthonous transmission of the Zika virus in Brazil was confirmed by that country's public health authorities in May of 2015 (WHO, 2015). The public health measures put in place by national and state authorities include designing and disseminating a sentinel surveillance protocol for the Zika virus, developing and testing a protocol for monitoring neurological syndromes and vector control efforts (WHO, 2015).

Due to the large increase in reported cases of diseases transmitted by *Aedes aegypti*, the Ministry of Health of Brazil decreed the situation to be a public health emergency in November of 2015 (Red Cross). In January 2016, the government requested assistance from the Brazilian Red Cross and the International Federation of the Red Cross in designing and implementing a strategy to eliminate the vector (Red Cross).

The Red Cross has collaborated with health authorities in Brazil in community education and prevention activities related to Zika in urban and rural areas. On January 23, 2016, in Rio Grande do Norte, a community education campaign on Zika prevention was carried out with the help of volunteers from the Brazilian Red Cross, Civil Defense, community leaders and other organizations (Red Cross), which reached 6,952 people.

The government organized a national day for mobilization against *Aedes aegypti* on February 13, 2016. This campaign reached 2.4 million properties in 428 municipalities in the country, and mobilized 220,000 members of the armed forces, 46,000 community epidemic response agents and 266,000 community health agents (Red Cross). In February, educational events were held in schools to promote Zika prevention. The Red Cross of Brazil, in coordination with the civil defense, fire departments, the armed forces and community organizations, has achieved the active participation of over 1,000 volunteers and public sector employees and officials in community outreach and education activities and efforts to eliminate mosquito breeding sites, reaching over 10,000 people.

The Brazilian Red Cross has outlined a Strategy and Operational Plan for reducing the transmission of Zika in Brazil. This plan is focused on various areas of interest, such as communicating risks to the general public, community cleanup campaigns, vector control and community-based surveillance, and community surveys. It mentions the importance of training community members on how to identify the signs and symptoms associated with mosquito-transmitted diseases.

The detailed operational plan delineates various activities to be carried out in order to reach its goal. **A number of these activities call for the active participation of the community, such as the creation of local epidemic control networks as part of a community-based epidemiological surveillance system, the creation of community psycho-social support networks and educational events promoting sanitation, the elimination of mosquito breeding grounds and mobilizing the community to eliminate waste** (especially objects that can accumulate stagnant water).

UNICEF has also been working in Brazil, primarily on controlling vectors, joining forces with communities throughout the country to eliminate mosquito breeding sites (UNICEF, 2016). It is also working together with the Ministry of Health, the WHO and municipal governments to teach affected communities how to reduce mosquito-borne infections (UNICEF, 2016). Through these efforts, information has been transmitted through 20 television stations and 40 radio stations nationwide, the material has reached 7.9 million people and more than 198,000 people have become directly involved (UNICEF, 2016).

A virtual platform for municipalities was set up called Growing Together, designed to help local governments to achieve better results by exchanging experiences and engaging in joint planning and implementation efforts. Network users can publish information on strategic actions they are taking, photographs and evidence of good practices.

6. PAN-AMERICAN HEALTH ORGANIZATION / WORLD HEALTH ORGANIZATION

In 2016, the Pan-American Health Organization (PAHO) organized a “Mosquito Awareness Week” throughout all of Latin America and the Caribbean (PAHO, 2017). This campaign is focused on eliminating the vector and communicating prevention measures, especially for pregnant women, with the goal of reducing the risks associated with the Zika virus. Of the 36 countries in the region, 27 participated in outreach, communication and awareness-raising activities around the Zika virus. The organization hopes to continue these activities in all countries in the region in 2017.

The overall objective of the campaign is to increase the level of knowledge about the Zika virus and other vector-borne diseases (VBDs) among health care professionals, government authorities and the general public. Its specific objectives are:

1. Implement Mosquito Awareness Week in all the countries of the Region.
2. Elevate the issue to the national agenda for decision-makers, with the commitment to promote/implement policies aimed at facilitating/improving conditions for preventing and controlling the vector (*Aedes aegypti*).
- 3. Provide information, promote social mobilization and community participation to control the vector.**
4. Promote and facilitate intersectoral coordination, for joint, coordinated action to mitigate VBDs.

PAHO/WHO suggested a series of activities to be carried out as part of each national Mosquito Awareness Week, adapted to the needs of each country: training workshops on prevention outreach for health care providers; training workshops on social mobilization and communication for entomologists and technicians; and instructing doctors on different techniques to use to inform patients about vector control. It also called for activities in schools to teach students what protection measures they and their families should take, and how to eliminate mosquito breeding grounds, and activities for communicating the importance of prevention to the general public.

In Argentina, this campaign took place in October 2016. As part of the week, interactive children's games were developed like "Los Dengadores", in which the kids identify objects that are potential breeding grounds and learn why mosquitos like to live there. Material was also distributed containing information about the characteristics of the *Aedes aegypti* vector and its relationship to Dengue, Zika and Chikungunya (UNICEF, 2016). Informative talks were given to encourage mosquito-free spaces, and a contest was organized for health system teams to recognize the best experiences in communicating best preventive practices against vector-borne diseases.

V. EXPERIENCES WITH COMMUNITY-BASED EPIDEMIOLOGICAL SURVEILLANCE SYSTEMS FOR ZIKA AND VECTOR CONTROL IN ECUADOR

In January 2016, the first laboratory-confirmed cases of Zika virus infection in Ecuador were reported (MSP, 2016). As of the latest epidemiological update, corresponding to epidemiological week 28 of 2017, there were 5,022 confirmed cases of illness due to the Zika virus since the problem started, of which 2,075 occurred in this year (one case was reported in 2015). (MSP, 2017).

In light of the threat posed by the Zika virus, in November 2016, the Ministry of Health published a document entitled *Response to the Zika virus disease in Ecuador* (MSP, 2016).

The objective of this document was to reduce the impact of the virus in Ecuador, through outreach, prevention, detection, monitoring, control, and managing and communicating risks. The following strategies were established to achieve this objective:

- Inter-sectoral coordination
- Early detection of cases, control and surveillance
- Capacity development (laboratory, clinical management, vectoral surveillance and control in the communities)
- Rapid and integrated health interventions (vector control)
- Information, communication and education strategy.

Citing the Department of Prevention and Control Strategies of the Ministry of Public Health of Ecuador, this document highlights the application of vector control measures that are integrated (simultaneous or coordinated) in space and time (control of adult and larvae vectors by trained personnel, improving sanitation and encouraging community efforts) as essential for achieving the most impact in the shortest time possible. It is very important that during chemical control operations, appropriate personal protection equipment is used, without exceptions. It is the responsibility of the vector control programs to supply this equipment to their personnel, to audit its use and to have sufficient backup equipment stored in appropriate conditions.

This document affirms the importance of community participation in terms of vector control. Therefore, it calls for the formation of brigades to carry out the following actions:

- **Inspect and observe the presence of breeding sites in homes and other buildings within their area of work.**
- **Raise awareness and empower family members and the community to identify existing risks and to be part of the solution, by adopting lifestyle changes which help to prevent the reproduction of vectors that transmit Dengue, Chikungunya and Zika.**
- Recommend the weekly cleaning and scrubbing (using a brush) of water tanks for domestic use.

- Destroy unusable containers found in yards and around the home.
- Treat 100% of deposits of standing water found in yards and patios with larvicide (temephos – biolarvicide).
- Fill out and consolidate the daily log or report.

The brigades are led by supervisors from the Ministry of Public Health, who must oversee and audit all of the work being done.

In addition, the community is the key link in health promotion, and therefore it is indispensable to implement strategies that involve the active participation of the population, raise awareness, provide knowledge, and encourage changes in behavior (MSP, 2016). Health promotion activities include educating people about means of transmission, symptoms, and the consequences of the virus. To this end, the MSP suggests a number of communicational activities in this document, such as:

- Disseminating audio-visual material through national media outlets and info-channels of the MSP;
- Negotiating with national high-profile television programs to include Zika prevention messages in their broadcasts;
- Creating an application for cellular devices that provides updated information on Zika at the national and international level;
- Door-to-door communication through the malnutrition and maternal mortality campaign;
- Disseminating key Zika prevention messages through the call center and the 171 line of the MPS; and
- Sharing the strategy to address Zika and supplying materials to inter-institutional alliances.

The Integrated Epidemiological Surveillance System (SIVE) of Ecuador is intended to provide the necessary information to actors at all levels of the health care system to plan and evaluate the impact of health interventions (MSP, 2014). One of the subsystems of the SIVE is the SIVE-Community, which is implemented at the level of the health care community. The SIVE is structured into two components: indicator-based surveillance and event-based surveillance. For the event-based component, community surveillance plays a leading role as an informal source of information that can identify potential events that can threaten public health, and constitutes a fundamental step in the early detection of cases and the

implementation of immediate control actions (MSP, 2014). The SIVE technical note describes the surveillance network and the functions of each member of the network. The function of the district epidemiology teams is to organize epidemiological training events at the local level, and also to support training activities for community leaders and promoters in the area of epidemiology.

In addition, it is the function of the Health Operations Units of the public and complementary health care systems to capture and analyze the information provided by community leaders, health promoters, public employees, among others.

One of the inter-sectoral efforts that the MSP has coordinated in the fight against the Zika virus in the country is its work with the Armed Forces at the national level, as well as with the National Police. 2,547 active members of the military have been employed in civic vector control awareness activities, identifying and eliminating breeding sites, and treating water reservoirs by distributing bio-larvicides and performing fumigations (MSP).

Together with the National Police, the MSP trained 150 police officers in the city of Manta on prevention measures.

UNICEF has also carried out a number of health outreach activities related to the Zika virus in Ecuador. On July 14, 2016, the organization launched a campaign with the slogan “Make sure your baby is born healthy, don’t get bitten by mosquito” in Guayaquil (UNICEF, 2016). This campaign features a television spot, a radio spot, informational brochures, educational material for children, instructions on putting together a Zika prevention kit, and positioning of key messages. These prevention messages have reached more than 60 communities (UNICEF, 2017).

In addition, UNICEF is training 464 teachers on how to use Zika-themed educational materials for their students from ages 4 to 15. This material includes a book featuring different activities for each age group, and a teacher’s guide, and so far, 3,261 students have been involved in the Zika prevention program (UNICEF, 2017). This educational campaign focuses on preventing Zika-related diseases through vector control efforts.

There is a consensus among various of the people interviewed, both at different levels of management of the Ministry of Public Health, as well as officials from other institutions working in the health field, that the activities currently being carried out by the MSP are being approached from the perspective of the formal institutional health system, without active participation.

The initiatives that have been introduced primarily involve chemical vector control, *mingas* or collective work days to destroy breeding sites (with some community participation) and health promotion activities with the participation of the Primary

Health Care Providers. The MSP is currently preparing health education messages related to Zika, which have not yet been released on the air.

Both MSP personnel as well as staff from other institutions are aware that since the National Malaria Eradication Service ceased activities, there has been a considerable reduction in work done with the communities, and efforts have basically focused on education and promotion activities, without a more proactive engagement on the part of the community.

In addition to certain promotion and education activities, MSP staff are involved in detecting cases, identifying pregnant women with Zika and destroying breeding grounds; however in many cases these activities are limited by the lack of resources for travel or their limited ability to meet with communities in the evenings to provide education and prepare these activities, when community members are more available. In some cases, these activities are coordinated and supported by the local health committees, with the participation of local governments.

Of the few local initiatives that exist to support MSP activities with community participation, we can highlight a pair of projects intended to reduce the existence of mosquito breeding sites; one project involving the community production of tank and container lids, and a tire recycling program where the tires are transformed and used in family gardens.

As for the reporting of suspected cases or potential vector breeding grounds, community participation is sporadic and often spontaneous. There is not at this time a structured system of community participation that facilitates reporting from the community.

VI. CONCLUSIONS

In certain countries in the region, there are regulations and policies in place that seek the active participation of communities in terms of epidemiological surveillance, and incorporate community members in the response plans set forth by the Health Authorities; however, our research reveals a limited number of community-based surveillance systems actually in operation.

Much of the grassroots community participation is focused on training and educational campaigns for vector control and disease prevention. There are no activities led by community leaders and volunteers focused on the active search for cases and/or vector breeding grounds.

In Ecuador, there is no structured system for community-based reporting of suspected cases or vector breeding sites, which allows community members to actively participate in supporting the efforts of the Ministry of Public Health.

Ecuador's Zika Response Plan mentions the community in terms of vector control and health promotion, however efforts to engage the community in a true process of community surveillance are practically nil.

Table 1: Activities carried out in Ecuador

Activities related to Zika at the community level - Ecuador					
Institution	Type of intervention	Activities carried out	Dates	Community actors	Results
MSP	Planning	Preparation of the Zika Response Plan document	September 2016	MSP	Calls for the creation of community brigades to raise awareness and empower families
MSP	Prevention / vector control	Education for vector control		Civil defense, community	Collaboration of 2,574 active members of the military nationwide to carry out an intensive vector control operation involving 1,809,000 homes throughout the country
MSP	Prevention	Prevention Education Workshop		National Police	150 members of the Manta police force were trained in prevention measures.
UNICEF - MSP	Prevention	Campaign for pregnant women: "Make sure your baby is born healthy; don't get bitten by mosquitos"	July 2016	UNICEF, MSP	Television and radio spots, educational material, training for teachers, reaching 60 communities.
UNICEF - MSP	Prevention	Educational campaigns using materials for students aged 4 to 15	2016 - 2017	UNICEF, MSP, teachers, students	464 teachers received training and 3,261 students were involved in the Zika prevention program.

Table 2: Activities in other countries in the region

Zika-related activities at the community level						
Country	Institution	Type of intervention	Activities carried out	Dates	Actors	Results
Argentina	Ministry of Health	Planning	Guide for the Integrated Surveillance of Zika Virus Infection and Recommendations for Health Care Teams	2016	Ministry of Health	The objectives of the Guide are to detect the introduction of the virus and monitor it, reduce the risks it presents and guide activities. Does not mention community surveillance.
	UNICEF	Planning / Strategy	Guide to Social Participation in the Prevention of Dengue, Zika and Chikungunya	2016	UNICEF, community volunteers	This guide, geared toward members of the community, sets out the lines of action for community participation in vector control and the prevention of Dengue, Zika and Chikungunya.
Bolivia	Ministry of Health	Planning	Preparation of the National Guide for Managing the Zika Virus Infection	2016	Ministry of Health	Delineates a strategy for organizing Zika virus prevention and control activities. This strategy emphasizes the importance of Intercultural/Community Family Health Care.
	Presidential Decree	Planning/Strategy	Approval of the implementation of the Integrated Management Strategy	2016	Ministry of Health	Calls for the establishment of a Community Surveillance Network
	UNICEF	Prevention/Education	Door-to-door campaign to inform people about the risks of Zika	2016	UNICEF	This campaign reached 246,619 families in 2016.
Brazil	Red Cross	Planning	Formulation of Strategy and Operational Plan	2016	Red Cross	Detailed operational plan with objectives, outcomes/products, planned activities, timeline and monitoring indicators.
	Red Cross	Prevention	Zika Prevention Educational Campaign	Jan-16	Red Cross volunteers, Civil Defense, community leaders	The campaign reached 6,952 people
	Government of Brazil	Prevention	National Zika Education Day.	feb-16	National government, municipalities	2.4 million properties were visited in an operation that mobilized 220,000 members of the armed forces, 46,000 community epidemic agents and 266,000 community health agents.

	Government of Brazil	Prevention/ Education	Zero Zika National Education Day	feb-16	National government	Educational events
	UNICEF	Vector control	Outreach campaigns for reducing the risk of the virus and eliminating breeding sites	2016	Communities, Ministries of Health and Education	The educational material has reached 7.9 million people and over 198,000 people were directly involved in the campaigns.
	UNICEF	Vector control / Planning	“Growing Together” Virtual Platform	2016	UNICEF, Municipalities	A platform was set up for municipalities to be able to share their strategic initiatives and experiences.
Colombia	Ministry of Health	Planning	Formulation of the Response Plan to Zika virus-related fever	feb-16	Ministry of Health	Establishes the lines of action and specific activities for each Ministry of Health stakeholder to combat the impact of Zika, including health surveillance activities/products.
	Ministry of Health	Planning	Public Health Surveillance Protocol	ene-16	Ministry of Health, National Institute of Health	Establishes a number of surveillance processes for identifying and monitoring trends in cases of Zika virus disease; provides public policy guidelines. Highlights the importance of community surveillance.
	City government of Cienega	Community surveillance	Community Epidemiological Surveillance Committee (COVECOM)	2016	Municipality, Health Department, Community leaders	Empowers leaders to be health monitors in their neighborhoods, collect information and transmit it to the Health Department
	City government of Barranquilla – Department of Health	Prevention/ Community surveillance	Health Walkers and community mothers	2016	Municipality, community volunteers	Volunteers visit Barranquilla neighborhoods to inform their neighbors about the virus, teach residents how to eliminate breeding sites, and detect possible cases.
		Prevention/ Training	Fair for Safe and Responsible Sexuality: Preventing pregnancy and identifying pregnant women with Zika	2016	Municipality, Health Department, Community	Attended to over 1,000 pregnant women and women of reproductive age
		Community surveillance	Creation of a Whatsapp group to report cases of diseases transmitted by the Aedes aegypti vector with the participation of community leaders	2016	Municipality, District Health Department, Community leaders	Training and guides for volunteer community leaders.
Peru	Ministry of Health	Planning/ Strategy	National Zika Preparedness and Response Plan	2016		Defines lines of action to prepare surveillance systems
Latin America & Caribbean	OPS	Prevention/ Training	Mosquito Awareness Week	2016/2017	WHO/PAHO, Health authorities in each country	Educational campaign carried out in 27 of the 36 countries of the LAC region on vector elimination and preventive measures.

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